

ABSTRACT

A ring oscillator of an even number of stages of inverting/summing amplifiers that adds, to an input of each of the amplifiers, a signal from one such of the amplifiers as to be distant by an even number of stages therefrom, to realize a desired oscillation operation, thereby directly generating signals having phases shifted by 90 degrees from each other. Further, the signals in the ring oscillator are complementary to each other, so that by arranging these signals close to each other in a wiring, it is possible to realize low sensitivity to a mixed external signal.